2.3 Service Analysis and Strategic Planning Revised 4/2013

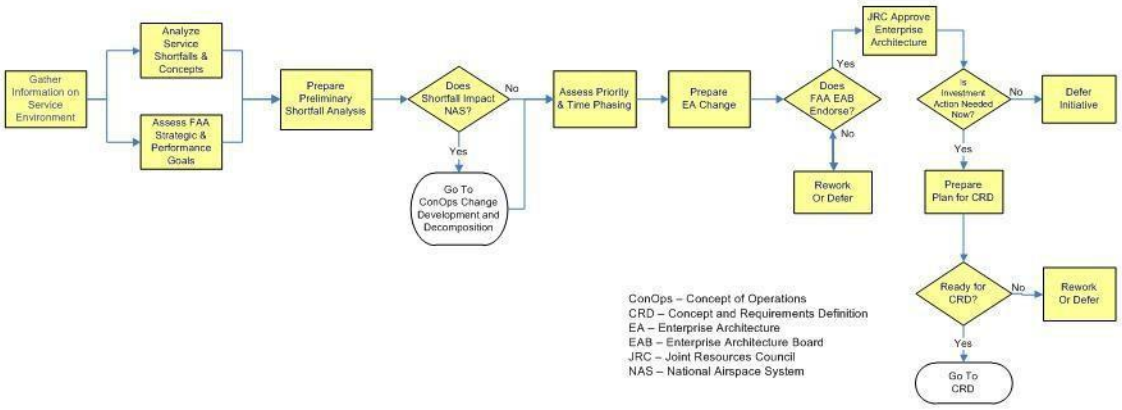
Service analysis and strategic planning determines what capabilities must be in place now and in the future to meet agency goals and the service needs of customers. Results are captured in the "as is" and "to be" states of the enterprise architecture, as well as the roadmaps for moving from the current to the future state. Results are also captured in line-of-business business plans and service organization operating plans, which specify how each will manage its RE&D, F&E, and OPS resources over time. These plans integrate new investment initiatives with the operation and support of fielded assets and other necessary actions to optimize service delivery. Continuing analysis keeps planning current with changes in the service and operational environment.

Industry best practices (e.g., technology and service demand forecasting, portfolio management, customer surveys) are employed during service analysis to align service outcomes with actions and activities necessary and sufficient to realize benefits for the FAA and its customers. Service analysis may lead to the refocus, reduction, or elimination of ongoing investment programs, and may identify new and more productive ways of doing business. It may also identify alternative paths for achieving service goals in a dynamic environment, and may identify opportunities for improving FAA strategic planning when the service environment evolves in ways not anticipated. Some investment opportunities may require research and development to demonstrate operational concepts, reduce risk, or define requirements before proceeding further in the lifecycle management process.

2.3.1 What Must Be Done Revised 4/2017

Figure 2.3-1-1 portrays the key activities of service analysis and strategic planning. These activities develop the information necessary for determining which service shortfalls or new ideas for improving service delivery are approved for inclusion in agency strategic planning documents. When a service shortfall impacts the National Airspace System, it enters the NAS ConOps change development and decomposition process (see Figure 2.3.1-2) to determine how it fits within the National Airspace System.

Figure 2.3-1-1 Key Activities of Service Analysis and Strategic Planning



- **Gather Information on the Service Environment.** Service organizations analyze forecasts for aviation service needs and stay abreast of opportunities for improving

service delivery as a basis for determining and prioritizing service needs and shortfalls. A continuing dialog with and feedback from customers (e.g., commercial air carriers, general aviation, air transport industry, state and local airport authorities) and users (air traffic and technical operations) are crucial, as is the supportability and operational outlook for fielded assets.

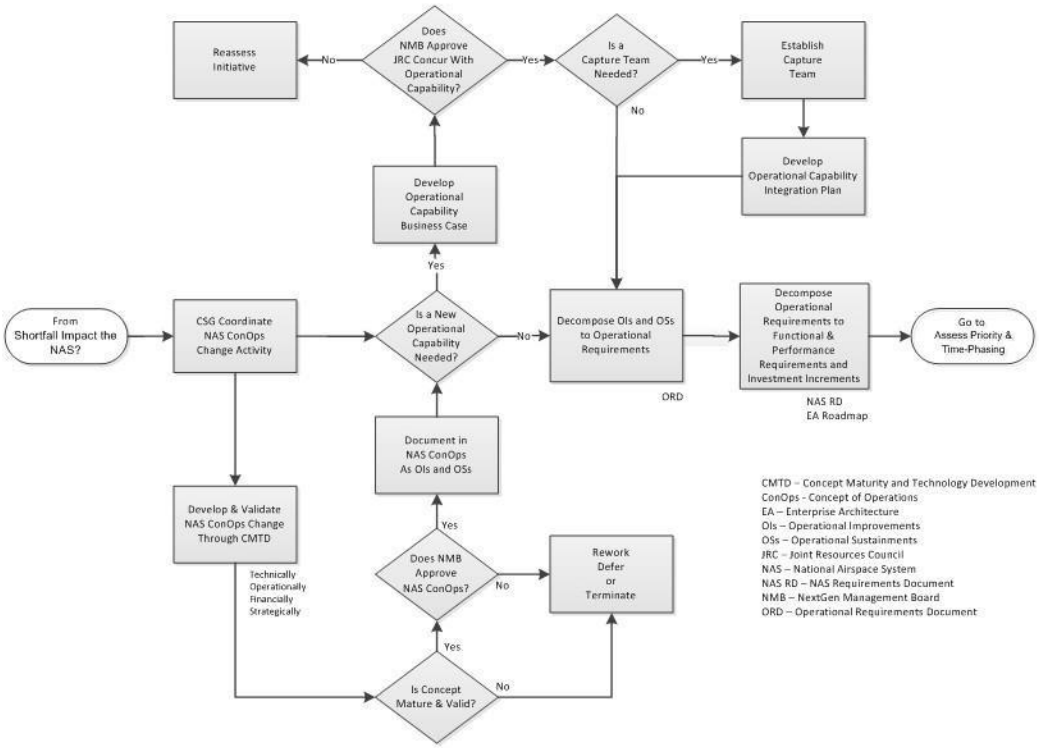
- **Analyze Service Shortfalls and Concepts.** Lines of business use service environment performance information to identify shortfalls and ideas for improving service delivery within their domain. Aviation research by NASA and other industry and government organizations may also identify emerging service shortfalls or technological opportunities for improving service delivery. This activity identifies business, technology, organizational, process, and personnel issues that affect service outcomes, as well as assumptions, risks, and dependencies.
- **Assess FAA Strategic and Performance Goals.** Service shortfalls or new ideas for improving service delivery should support current services or fulfillment of FAA strategic and performance goals. When they do not, the shortfall or new idea must be shown to have sufficient merit to warrant inclusion in agency strategic planning documents. Agency strategic plans and performance goals may also define service shortfalls that must be addressed in lower-level agency planning.
- **Prepare Preliminary Shortfall Analysis.** The service organization analyzes the shortfall or new idea as a foundation for understanding the problem and its urgency and impact. The shortfall is the difference between future service need and current capability. A service shortfall is usually addressed by a sustainment action for existing assets or a new service delivery idea including cloud services for predicted gaps. A new idea or concept should deliver existing services more efficiently or provide new services of value to the FAA and aviation industry. At this stage, the service shortfall is expressed as levels of service improvement, not by specific performance values.
- **Does Shortfall Impact the National Airspace System?** A new service need or shortfall that impacts the National Airspace System is assessed by means of the NAS ConOps Change Development and Decomposition Process (see Figure 2.3.1-2) to determine whether or how the NAS ConOps should be changed. Once NAS needs or shortfalls have been appropriately included in the NAS ConOps as operational improvements or sustainments, they move forward with Mission Support shortfalls to determine how they should be integrated within the FAA enterprise architecture.
- **Assess Priority and Time-phasing.** A new service shortfall or need must be shown to have sufficient merit to warrant inclusion in the enterprise architecture when evaluated against other service needs of the agency. The line of business works with the Technical Review Board (NAS) or the Architecture Review Board (Mission Support) and other lines of business to determine how a new service need, technology refresh, or sustainment activity should be planned, time-phased, and integrated within the architecture relative to all other agency service needs. This activity may require rework of existing shortfalls and improvements already in the architecture.
- **Prepare Enterprise Architecture Change.** The service organization prepares change documents reflecting the service need or shortfall and submits them to the FAA Enterprise Architecture Board for endorsement. NAS service needs and shortfalls are expressed as operational improvements and operational sustainments.
- **Does FAA Enterprise Architecture Board Endorse the Change?** The FAA Enterprise Architecture Board determines whether and how to integrate new service needs within the enterprise architecture and its roadmaps. In making this determination, the board analyzes

and assesses the new service need against all other service needs of the FAA using such criteria as contribution to agency strategic goals, monetary or performance benefits, compatibility with the enterprise architecture, risk, and political sensitivity. The decision to endorse and place a new service need, improvement, or sustainment within the enterprise architecture validates that this service need is an agency priority and warrants further action.

- **Joint Resources Council Approves the Enterprise Architecture.** The Joint Resources Council approves the FAA Enterprise Architecture annually. No service need can proceed further in the AMS lifecycle management process unless it is in the enterprise architecture approved by the JRC. Emergency needs not contained in the JRC-approved architecture may be presented to the FAA Enterprise Architecture Board by exception.
- **Rework or Defer.** Service needs, shortfalls, improvements, and sustainments not approved for inclusion in the enterprise architecture are reworked or deferred according to the direction of the FAA Enterprise Architecture Board or Joint Resources Council, as appropriate.
- **Is Investment Action Needed Now?** The investment increment enters concept and requirements definition at the appropriate time as determined by its time-phasing in the appropriate enterprise architecture roadmap.
- **Defer Initiative.** Investment action is deferred when action is not needed now to meet agency plans and schedules.
- **Prepare Plan for Concept and Requirements Definition.** NAS Systems Engineering Services (NAS) Office of Information & Technology, Solution Delivery Service, Solution Strategy Division, EA Branch (Mission Support) works with the implementing and operating service organizations to prepare a plan for concept and requirements definition. This plan (1) specifies how tasks will be accomplished; (2) defines roles and responsibilities of participating organizations; (3) defines outputs and exit criteria; (4) establishes a schedule for completion; and (5) specifies needed resources. By signing the plan for concept and requirements definition, organizations that will do the work agree to provide the necessary resources.
- **Ready for Concept and Requirements Definition?** The FAA Enterprise Architecture Board makes the decision to enter concept and requirements definition or directs other action.
- **Rework or Defer.** The investment initiative is reworked or deferred when planning or organizational support is not sufficient to enter concept and requirements definition.

Figure 2.3.1-2 NAS ConOps Change Development and Decomposition Process

(Applies to the NAS only)



- **Concept Steering Group Coordinates NAS ConOps Change Activity.** The Concept Steering Group reviews the preliminary shortfall analysis to determine whether the service shortfall or new idea is addressed in the NAS ConOps. New shortfalls or ideas that are already within the scope of the NAS ConOps move to decomposition into operational requirements and investment initiatives after determining whether they should be incorporated into a new or existing operational capability. For shortfalls and ideas not addressed in the NAS ConOps, the Concept Steering Group coordinates discussion with the sponsor and the lines of business to determine what development or validation activity is needed.
- **Develop and Validate NAS ConOps Change Through Concept Maturity and Technology Development.** New ideas for improving NAS service or eliminating a shortfall must be validated to be technically and financially feasible, strategically aligned with agency goals and objectives, and have significant operational benefit to warrant inclusion in the NAS ConOps. The Concept Steering Group coordinates activity to develop and validate new ideas and concepts. Typically, the concept maturity and technology development process is applied to the point where technical risk is sufficiently low and potential benefits sufficiently high to justify inclusion. This activity includes safety and security assessments to identify and characterize any safety hazards and information security factors associated with the idea or concept.
- **Is Concept Mature and Valid?** The NAS ConOps is a stable document that evolves over time. Only the best high-value new concepts and ideas are added. The Concept Steering Group assesses development and validation results and records their findings and recommendations in a memorandum to the NextGen Management Board, which approves all changes to the NAS ConOps.
- **Does NextGen Management Board Approve NAS CONOPS?** The NextGen Management Board approves changes to the NAS ConOps. Changes are presented to the

Joint Resources Council. Any JRC concerns or issues are resolved to ensure approved concepts are beneficial *and* affordable and supported by both management bodies.

- **Document Changes in NAS ConOps as Operational Improvements or Sustainments.** Service shortfalls and new concepts are documented in the NAS ConOps as operational improvements and operational sustainments.
- **Is a New Operational Capability Needed?** Grouping and managing operational improvements and sustainments with a high degree of interdependency may result in a high-value operational capability for the agency and aviation community. In such cases, one or more operational improvements will be organized and managed as a portfolio to ensure all essential elements of the operational capability are obtained and deployed.
- **Develop Operational Capability Business Case.** Advanced Concepts and Technology Development works with the ATO Program Management Office and Investment Planning & Analysis to develop a business case for the operational capability. The business case contains a rough estimate of the costs and benefits associated with developing and deploying the operational sustainments and improvements necessary to enable the operational capability. The PMO coordinates with ATO service organizations to derive rough cost estimates for the work required to develop and deploy the investment increments necessary to achieve the operational capability. These same organizations derive a rough monetized estimate of benefits that will accrue to the FAA and aviation community when the operational capability is fully deployed. A preliminary assessment of risk, priority, affordability, and political sensitivity complete the business case.
- **Does NMB Approve and JRC Concur With the Operational Capability?** The NextGen Management Board decides whether to approve and establish the operational capability. The decision is based on the business case, contribution to agency strategic and performance goals, and affordability. The operational capability is implemented through its constituent investment increments approved and baselined individually by the Joint Resources Council. Obtaining these capabilities may require establishment of a capture team to integrate and coordinate activity by multiple program offices or service organizations providing the investment increments necessary to achieve the overall operational capability. By concurring with the NextGen Management Board decision, the Joint Resources Council acknowledges the operational capability and its constituent investment increments are agency priorities. The business case for the operational capability is a determining factor at future investment decisions for increments necessary to achieve the operational capability.
- **Reassess Initiative.** If the NextGen Management Board does not approve the operational capability, it may terminate the effort or recommend other activity to amend the concept or reduce risk. Any issues or concerns of the Joint Resources Council must be resolved before the operational capability is implemented.
- **Is a Capture Team Needed?** The NextGen Management Board decides whether to establish a capture team to coordinate the development, integration, and deployment of investment increments necessary to achieve an operational capability. In making this decision, the board evaluates the complexity and risk associated with the operational capability and the availability of resources. The capture team brings together cross-agency empowered representatives from each organization that must develop and deploy an investment increment to achieve the operational capability. The objective is informed, integrated, and coordinated decision-making by all parties.
- **Establish Capture Team.** Each line of business that must contribute to achieve the operational capability provides an empowered representative to the capture team. The

capture team monitors development, integration, and deployment of all elements of the operational capability, as well as plan and oversee a post-implementation evaluation to confirm that forecast benefits are being achieved or to define and implement corrective action when they are not.

- **Develop Operational Capability Integration Plan.** The team works with the portfolio manager to develop an Operational Capability Integration Plan (OCIP) that specifies responsibilities and agreements among all team members and organizations. The OCIP also defines the lifecycle plan, performance goals and measures, and operational benefits that will accrue from implementation of the operational capability.
- **Decompose Operational Improvements and Operational Sustainments to Operational Requirements.** A cross-organizational team with members from all lines of business and led by Advanced Concepts and Technology Development decomposes the NAS ConOps narrative of operational improvements and operational sustainments into NAS operational requirements. These requirements are recorded in the NAS Operational Requirements Document.
- **Decompose Operational Requirements to Functional and Performance Requirements and Investment Increments.** A cross-organizational team decomposes NAS operational requirements to NAS functional and performance requirements. These requirements are specified with sufficient detail for allocation to investment increments that will be undertaken to achieve the operational improvements and sustainments in the NAS ConOps. The goal is clear and unambiguous traceability of requirements from the NAS ConOps to the NAS Operational Requirements Document to the NAS Requirements Document and then to the program requirements document of specific investment increments. Each investment increment enters concept and requirements definition at the appropriate time as determined by their time-phasing in the enterprise architecture roadmap.

2.3.2 Outputs and Products Revised 4/2013

2.3.2.1 Service Analysis and Strategic Planning Revised 4/2013

- Preliminary shortfall analysis that describes qualitatively the service need, shortfall, and legacy assets;
- Enterprise architecture change notices, products, and amendments;
- Updates to the enterprise architecture; and
- Plan for concept and requirements definition.

Key work products are verified and validated according to the FAA AMS Verification and Validation Guidelines before the CRD readiness decision.

2.3.2.2 NAS ConOps Change Development and Decomposition Revised 4/2013

- White papers, research reports, and outputs from concept maturity and technology development;
- Updates to the NAS ConOps;
- Operational capability business case;
- Operational capability;

- Capture team;
- Operational Capability Integration Plan;
- Updates to the NAS Operational Requirements Document; and
- Updates to the NAS Requirements Document.

Key work products are verified and validated according to the FAA AMS Verification and Validation Guidelines before the CRD readiness decision.

2.3.3 Who Does It? Revised 4/2013

2.3.3.1 Service Analysis and Strategic Planning Revised 4/2017

Organization(s)	Responsibilities
Service organizations	• Conduct service analysis • Prepare preliminary shortfall analysis reports • Prepare EA change notices, products, and amendments
Advanced Concepts and Technology Development Office (ANG-C), NextGen Lifecycle Integration Office (ANG-D)	• Assists NAS service organizations when preparing service analysis outputs and products
Office of Information & Technology, Solution Delivery Service, Solution Strategy Division, EA Branch (Mission Support)	• Assists Mission Support service organizations when preparing service analysis outputs and products
Lines of Business	• Prioritize LOB service shortfalls and new ideas • Determine whether a service shortfall impacts the National Airspace System • Work with the Technical Review Board to time-phase operational improvements and operational sustainments in the NAS architecture roadmaps
Technical Review Board	• Works with the lines of business to time-phase operational improvements and operational sustainments in the NAS architecture roadmap
Architecture Review Board	• Works with the lines of business to prioritize Mission Support service shortfalls and needs
FAA Enterprise Architecture Board	• Manages the FAA Enterprise Architecture

2.3.3.2 NAS ConOps Change Development and Decomposition Revised 4/2013

Organization(s)	Responsibilities
Service organization with shortfall/concept,	• Develop information needed to assess impact of shortfall/concept on the NAS ConOps

Advanced Concepts and Technology Development Office (ANG-C), NextGen Lifecycle Integration Office (ANG-D)	
Service organization with shortfall/concept, Advanced Concepts and Technology Development Office (ANG-C), Investment Analysis and Planning (IP&A)	□ Develop and validate shortfalls and new concepts technically, operationally, strategically, and financially
Advanced Concepts and Technology Development Office (ANG-C), CSG, service organization with shortfall/concept	□ Present shortfall/concept to the NextGen Management Board for inclusion in the NAS ConOps
NAS Systems Engineering Services Office (ANG-B), Advanced Concepts and Technology Development Office (ANG-C), NextGen Lifecycle Integration Office (ANG-D)	□ Document shortfall as operational improvements or sustainments in the NAS ConOps
ANG-B/C/D, PMO/LOB	□ Determine need for new operational capability
ANG-C, ANG-5, PMO/LOB, IP&A	□ Develop operational capability business case □ IP&A reviews the business case for the Joint Resources Council
ANG-C, ANG-5, PMO/LOB	□ Contribute to and participate in the decision to create a new operational capability
ANG-C/D, PMO/LOB	□ Determine the need for a capture team to plan and oversee a new operational capability
ANG-C/D, PMO/LOB, operating organization	□ Contribute to and establish a capture team
ANG-C, AJV-7, LOBs, service organizations	□ Decompose operational improvements and sustainments in the NAS ConOps into operational requirements and investment increments
ANG-B/C/D, operating organization, capture team (if applicable)	□ Decompose NAS operational requirements into NAS functional and performance requirements

2.3.4 Who Approves? **Revised 4/2013**

2.3.4.1 Service Analysis and Strategic Planning Revised 4/2013

Artifact	Approval Authority
Preliminary shortfall analysis	NextGen Lifecycle Integration Office, Director of the service organization with the need
Enterprise architecture products and amendments	FAA Enterprise Architecture Board
Plan for concept and requirements definition	Vice Presidents (ATO) or Directors (non-ATO) of the service organization with the service need and the operating service organization and the FAA Enterprise Architecture Board chairperson
FAA Enterprise Architecture	Joint Resources Council

2.3.4.2 NAS ConOps Change Development and Decomposition Revised 4/2013

Artifact	Approval Authority
NAS ConOps	NextGen Management Board
Operational Capability Business Case	NextGen Systems Analysis and Modeling (ANG-5)
Operational capability	NextGen Management Board (JRC concurs)
Capture team	NextGen Management Board
Operational Capability Integration Plan	NextGen Management Board
NAS Operational Requirements Document	ATO Operational Concepts, Validation & Requirements (AJV-7)
NAS Requirements Document	NAS Systems Engineering Service (ANG-B)

2.3.5 Concept and Requirements Definition Readiness Decision Revised 4/2013

The concept and requirements definition readiness decision occurs when an enterprise architecture roadmap indicates action must be taken to address a critical service shortfall or opportunity. At this decision, the FAA Enterprise Architecture Board verifies: (1) the service shortfall, operational improvement, or operational sustainment is in an enterprise architecture roadmap; and (2) planning and resources for concept and requirements definition are in place. The readiness decision is the gateway between service analysis and strategic planning and concept and requirements definition.

2.3.5.1 Entrance Criteria Revised 4/2013

The following are required for the concept and requirements definition readiness decision:

- Service shortfall, operational improvement, or sustainment is in an enterprise architecture roadmap and represents a compelling need of the FAA; and the

- Plan for concept and requirements definition is approved by the FAA Enterprise Architecture Board.

2.3.5.2 Decision Actions **Revised 4/2013**

The FAA Enterprise Architecture Board makes the decision to enter concept and requirements definition.